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# THE THEORY AND PRACTICE OF EDUCATIONAL GYMNASTICS



WILLIAM A. STECHER

UC-NRLF



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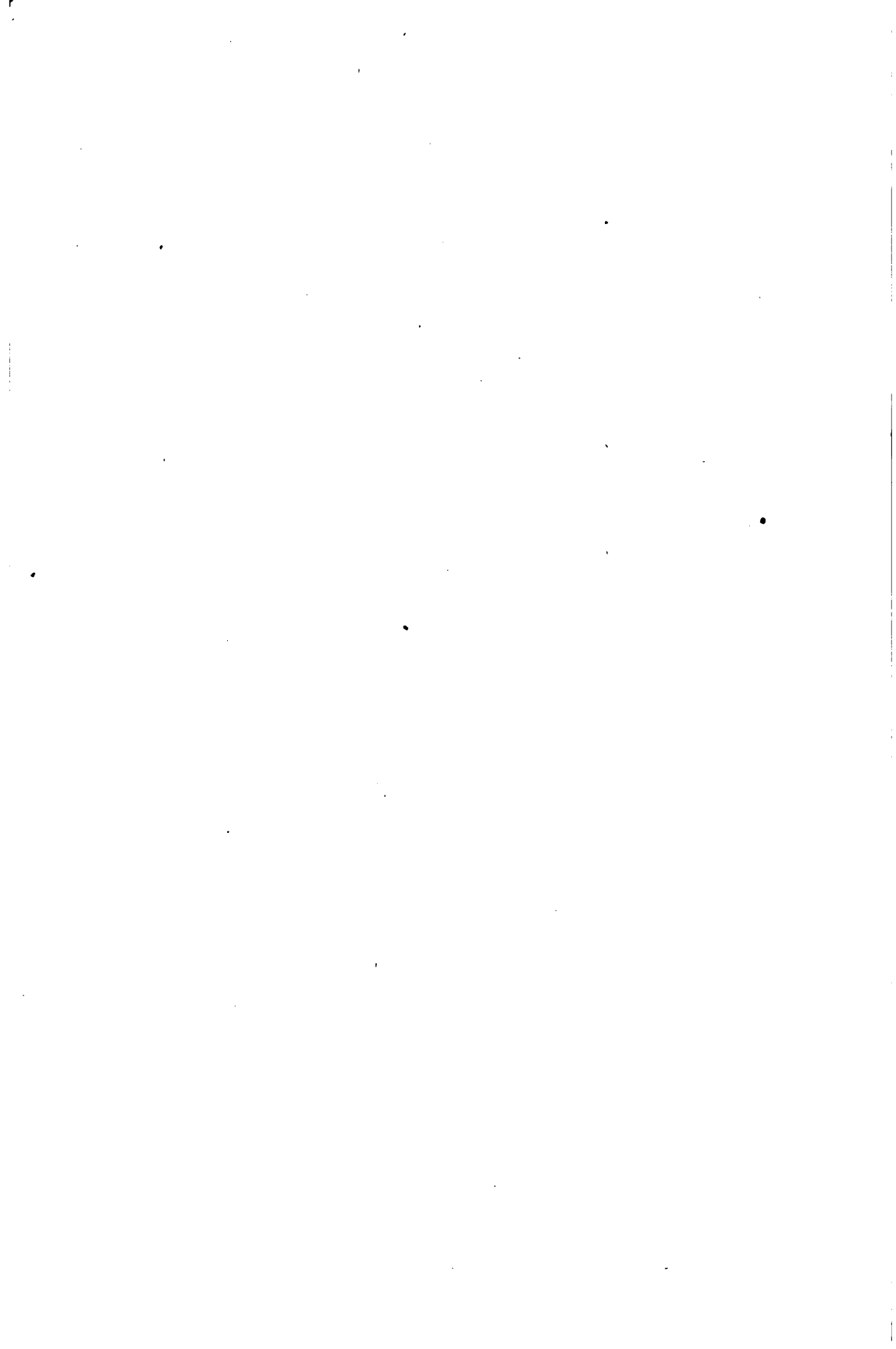


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BOYS' AND GIRLS' HIGH SCHOOLS











UNIV. OF  
CALIFORNIA

THEORY AND PRACTICE OF  
  
EDUCATIONAL GYMNASTICS

FOR

Boys' and Girls' High Schools

BY

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TO WHOM  
IT MAY COME

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# TABLE OF CONTENTS

## PART I

Determining Principles .....	7
I. The Aims of Physical Training .....	7
II. The Means .....	8
III. The Types of Lessons .....	9
IV. Aims of the Types of Movement Classified .....	10
V. General Notes .....	11
VI. Viewpoints Guiding the Selection of Physical Training Material .....	12
First Group— For Pupils 6 to 10 Years of Age .....	12
Second Group—For Pupils 9 to 13 Years of Age .....	13
Third Group— For Pupils 12 to 15 Years of Age .....	14
Fourth Group—For Pupils 15 to 20 Years of Age .....	15
VII. Principles Underlying the Combining of Movements Into Free Exercises .....	17
1. Pertaining to the Selection of Simple Exercises .....	17
2. Pertaining to Trunk Exercises .....	17
3. Pertaining to Sequences .....	17
4. Pertaining to Synchronous Movements .....	17
5. Pertaining to Increasing the Difficulty of Co-ordinations .....	18
VIII. Chart Showing Class-Aims (Average Performances) .....	19

## PART II

### PHYSICAL TRAINING MATERIAL FOR BOYS.

First High School Year .....	21
I. Tactics .....	21
II. Free Exercises .....	23
III. Rhythmic Steps .....	25
IV. Games. Track and Field Work .....	27
V. Apparatus Work .....	29
Second Year's Work .....	33
I. Tactics .....	33
II. Free Exercises .....	35
III. Rhythmic Steps .....	35
IV. Games. Track and Field Work .....	35
V. Apparatus Work .....	37
Third Year's Work .....	41
I. Tactics .....	41
II. Free Exercises .....	41
III. Rhythmic Steps .....	43
IV. Games. Track and Field Work .....	43
V. Apparatus Work .....	45
Fourth Year's Work .....	49
I. Tactics .....	49
II. Free Exercises .....	49
III. Rhythmic Steps .....	49
IV. Games. Track and Field Work .....	49
V. Apparatus Work .....	51

## PART III

### PHYSICAL TRAINING MATERIAL FOR GIRLS.

First High School Year .....	55
I. Tactics .....	55
II. Free Exercises .....	57
III. Rhythmic Steps .....	59
IV. Games. Track and Field Work .....	59
V. Apparatus Work .....	61
Second Year's Work .....	67
I. Tactics .....	67
II. Free Exercises .....	69
III. Rhythmic Steps .....	69
IV. Games. Track and Field Work .....	71
V. Apparatus Work .....	71
Third Year's Work .....	77
I. Tactics .....	77
II. Free Exercises .....	77
III. Rhythmic Steps .....	79
IV. Games. Track and Field Work .....	79
V. Apparatus Work .....	79
Fourth Year's Work .....	85
I. Tactics .....	85
II. Free Exercises .....	85
III. Rhythmic Steps .....	85
IV. Games. Track and Field Work .....	85
V. Apparatus Work .....	87
Reference Books .....	89

## APPENDIX

A. Illustrations of the principal gymnastic positions in free exercises and rhythmic steps .....	90
B. Corrective Gymnastics .....	99

# A FOUR YEARS' COURSE OF STUDY IN PHYSICAL TRAINING

FOR BOYS' AND GIRLS'  
HIGH SCHOOLS.

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Part I. Determining Principles

Part II. Material for Boys' Work

Part III. Material for Girls' Work

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## PART I. DETERMINING PRINCIPLES

### I. THE AIMS OF PHYSICAL TRAINING

The first aim of school gymnastics is to maintain and increase health, to develop and increase organic strength. Corrective work is a subdivision of this aim.

The second aim is to develop and increase skill, also courage, determination, presence of mind, honesty, and other mental and moral qualities.

Physical training, therefore, must embrace the following types of exercise:—

- (a) Exercises that develop prompt response to commands (obedience).
- (b) Exercises that develop initiative and skill (resourcefulness).
- (c) Exercises that develop co-operation (loyalty, unselfishness).
- (d) Exercises that develop determination (leadership).
- (e) Exercises that develop the musculature (improved posture).

## II. THE MEANS

1. The gymnastic means which the school can use to accomplish these aims are:—

(a) Tactics; (b) Free Exercises; (c) Rhythmic Steps; (d) Games, Track and Field Work, Miscellaneous Activities; (e) Apparatus Work.

2. According to their effects upon the body these means may be grouped as follows:—

GROUP 1. As *Exercises of Endurance and Quickness*, like running, playing of games, dancing, swimming, tramping, rowing, sledding, skating, etc.

GROUP 2. As *Exercises of Skill and of Localized Strength*, like the free exercises without and with hand apparatus (wands, dumb-bells, clubs, etc.); also exercises like vaulting, jumping, etc., or exercises upon apparatus like the horse, horizontal and parallel bars, booms, rings, ladders, etc.

GROUP 3. As *Exercises of Order*, marching exercises (tactics).

GROUP 4. As *Exercises of Strength*, like wrestling, lifting weights, etc.

3. In accomplishing the aims outlined above, the relative importance of the means are as follows:—

(a) The *first place* is to be given to *Exercises of Endurance and Quickness*; i. e., to exercises that have as their aims the increased mobility of the chest, the development of sound heart and lungs, increased metabolism in the shortest time; namely to exercises designed primarily for health and organic strength.

(b) The *second place* is to be given to *Exercises of Skill and of Localized Strength*; i. e., to exercises whose aim is to increase co-ordination or to increase the strength of localized groups of muscles.

(c) The *third place* should be given to *Order Exercises* (tactics).

(d) Exercises of strength should not, as a rule, be considered in school gymnastics.

### III. THE TYPES OF LESSONS

Whenever possible, all gymnastic work should be done out of doors. Even the best ventilated and cleanest gymnasium is an indifferent substitute for the open air. The gymnasium is useful mainly in inclement weather.

The following types of lessons show the approximate time to be given to the different groups of work. A lesson is supposed to last 45 minutes.

#### TYPE NO. 1—OUTDOOR.

1. Exercises of endurance and quickness ..... 25 to 30 minutes
2. Exercises of skill and localized strength ..... 12 to 15 minutes
3. Order exercises ..... 3 to 5 minutes

#### TYPE NO. 2—INDOOR.

1. Exercises of endurance and quickness ..... 20 to 25 minutes
2. Exercises of skill and localized strength ..... 18 to 20 minutes
3. Order exercises ..... 3 to 5 minutes

#### TIME AND ARRANGEMENT.

The time and the arrangement of the different parts of a gymnastic lesson lasting 45 minutes would be approximately as follows:—

1. Tactics, 2 to 4 minutes;
2. (a) Running, 2 to 4 minutes; (b) Rhythmic steps, 8 to 12 minutes;
3. Free exercises, 6 to 8 minutes;
4. Apparatus work, or track and field work, 10 to 12 minutes;
5. Games, 10 to 12 minutes.

In boys' classes, the time specified for rhythmic steps will often be used for apparatus work, or track and field work, or games.

#### IV. AIMS OF THE TYPES OF MOVEMENT CLASSED UNDER THE DIFFERENT GROUPS

(In all exercises good form is of the greatest importance.)

##### GROUP NO. 1—*Exercises of Endurance and Quickness.*

Running, both as a simple exercise and in games, is of the utmost importance in quickly increasing circulation and respiration, in developing heart and lungs, in increasing mobility of the chest.

If rhythmic steps are taken instead of running, they must be of a vigorous type, to induce strong action of the heart and lungs. Games, to come under this head, also must be of the vigorous type having much movement of the whole body.

Games and the competitive forms of track and field work should be used as some of the schools' most effective means of influencing the moral growth of boys and girls.

While it may appear difficult to influence swimming, tramping, sledging, rowing, skating, etc., it must, nevertheless, be the aim of teachers of physical training to get their pupils to indulge in these forms of natural exercise. Pupils should also be encouraged to play highly organized games. This may be done by the formation of permanent teams and clubs, and by the preparation of schedules for play, or any other physical training activity, after the regular hours of school, also on Saturdays and on holidays.

##### GROUP NO. 2—*Exercises of Skill and Localized Strength.*

The free exercises (calisthenics) come under this head. For high school boys, especially, they should be taken with light iron wands, iron dumb-bells, or with clubs, so as to increase their effectiveness. Exercises for the muscles of the trunk must predominate. Whenever possible all movements of this kind should first be taken upon command, and then in rhythm (in time, in series). When taken upon command, wherever practicable they should be combined with breathing exercises. When exercises have been well learned and are appropriate, they should at times be performed to music.

Most forms of field work, also the exercises upon fixed apparatus, belong to Group No. 2 (Track events like running belong to Group No. 1.) Exercises must be selected which keep as many pupils as possible employed at the same time. The object is to secure skill and correctness of execution, and to strengthen certain rather well defined groups of muscles. Many of these exercises, especially the exercises upon apparatus, are admirable to develop courage, determination, presence of mind, and like mental qualities.

##### GROUP NO. 3—*Order Exercises.*

Tactics should be used to accustom the class to prompt obedience and to co-operative action. They have no value for muscular development.

## V. GENERAL NOTES

1. As a rule, pupils of the same school grade should be grouped in a class. This class should then be divided into at least two divisions, based upon physical fitness.

2. Classes composed of pupils of different grades must be divided into several groups, based upon previous instruction and upon physical fitness. Successful teaching in sub-divided classes, also in all kinds of team work, is conditioned on competent leaders. Promising pupils should be selected and given separate instruction, and developed as a class of leaders. With competent leaders enough sub-divisions may be made to accommodate pupils of many degrees of physical development.

3. As soon as a good co-ordination has been developed and the class aims reached, it is wise, not only to allow, but to encourage pupils to invent suitable exercises and combinations (chosen exercises) not only on all pieces of apparatus, but also in other forms of physical training that lend themselves to the expression of individuality.

4. At suitable times during a lesson attention should be called to the effect of particular exercises. The physical training period also lends itself well to appropriate instruction in personal, school and community hygiene. This opportunity should constantly be used—but with discretion.

5. While the class-aims for boys and girls are practically alike, there should be a great difference in the method of teaching gymnastics to the two sexes. Any instruction, mental as well as physical, which with girls interferes with the menstrual period, is of evil and should cease.

6. In general the differences between the work of boys and girls are as follows:—

- (a) For girls more weight should be placed upon rhythmic steps, and upon corrective work.
- (b) In the track and field work, the apparatus work, and also in the games, the physical work demanded of girls should not be as great as that required of boys.
- (c) For girls there should be less competitive track and field work than for boys, also fewer strenuous games, both forms to be limited, as a rule, to intra-class and intra-school competitions.
- (d) For boys there should be a gradually increasing amount of competition in track and field work, in apparatus work, and also in games. This competition chiefly should be intra-class and intra-school, and only exceptionally should it be with outer-school teams.

7. By action of The Board of Public Education, all inter-school athletic work, in high as well as in elementary schools, is placed under the direction of the Supervisory Committee on Athletics (see "Handbook of Athletic Activities"). The Director of Physical Education is chairman of this committee.

## VI. VIEWPOINTS GUIDING THE SELECTION OF PHYSICAL TRAINING MATERIAL FOR THE DIFFERENT AGE-GROUPS IN THE ELEMENTARY AND HIGH SCHOOLS

### First Group—For Pupils 6, 7, 8, 9 and 10 Years of Age School Grades 1, 2 and 3

Excepting the Kindergarten, this is the first period of school work. So far as its effect upon health is concerned, for the average child school life means a change from a free active life to one requiring not only a considerable amount of sitting, but also decreased muscular activity; *i. e.*, to conditions interfering with sound growth. The result is a decreased incentive for lung growth, and a decreased circulation of blood and lymph.

The essential viewpoints in the choice of gymnastic material for this period, therefore, must be:—

First. To select exercises that quickly increase metabolism, and that induce a healthy normal growth.

Second. To select exercises that directly counteract the detrimental effects upon health which the habituation to school life brings to the child.

During this period, especially at its beginning, a child is too weak and undeveloped to perform exercises designed primarily to greatly increase muscular strength, or to develop special sets of muscles. The aim must be to select exercises that actively engage large muscle masses, and which at the same time stimulate respiration and circulation.

The activities employed for these ends should be mainly plays and games, as they create, largely, feelings of joy, and give opportunity for spontaneous action of the will power. At appropriate times, and especially when bad weather makes it impossible to exercise in the open air, the gymnastic lesson should consist of exercises for increasing good posture, of vigorous trunk exercises, of marching and of rhythmic steps.

Where it is possible, it should be the rule that gymnastics must be performed out of doors. No indoor exercises, however valuable, can be compared in their effect upon blood enrichment to the value of these same exercises when performed out of doors in the sunlight.

During this first school period the teacher begins to discover that some pupils are of slow mentality. For the mental stimulation of these pupils simple gymnastic games, and the song games with arm or leg movements are very valuable.

If children are of the extremely nervous type their gymnastic work should consist mainly of rhythmic exercises (not of exercises performed upon command). Exercising with properly selected music, also, is very valuable in such cases.

The fundamental ideas in selecting gymnastic material for this age-group are: large movements employing the large muscle masses; predominantly spontaneous and rhythmic work; much self-activity in the games and plays.

The essentials to be demanded in the gymnastic lessons are:—

- (a) Good posture in standing and marching.
- (b) Vigorous trunk exercises combined with simple arm and leg movements.
- (c) Elementary rhythmic steps in alternation with marching; also simple combinations of leg and arm movements.
- (d) Easy apparatus work, track and field work, and games.

Exercises of skill during this period are a most important gymnastic factor. Games may be employed to teach co-ordination, quickness and readiness. At the end of this period children begin to be interested in team games of low organization.

In track and field work, fast running (sprinting) from 50 yards gradually leading up to 75 yards (at the end of this period) should receive an increasingly prominent place. Endurance (slow) running should progress from 2 to 5 minutes. Broad jumping, both from a stand and a run, should be practiced. At the end of this period ice and roller skating should be encouraged.

In apparatus work easy exercises of agility, mainly in the hang, and in hang-lying, should receive careful attention.

### Second Group—For Pupils 9, 10, 11, 12 and 13 Years of Age School Grades 4, 5 and 6

During the last years of this period girls arrive at puberty. The viewpoints regarding the selection of work remain as before, but much greater demands can be made upon skill, upon more difficult co-ordinations.

Games requiring closer co-operation begin to appeal to this group. The games of boys are characterized by a fighting, antagonistic spirit; games requiring increased skill, daring and courage appeal very much to this age-group.

The track and field work should consist of sprinting up to 100 yards, and endurance runs from 6 to 8 minutes. Broad and high jumping, also the triple standing jump, and the hop, step and jump should be practiced.

Swimming should be taught to pupils at the end of their fourth school year. Older pupils should be encouraged to practice the more advanced swimming strokes. Greater skill in skating should be encouraged. In fact every form of outdoor exercise like sledding, rowing, tramping, etc., should be welcomed as a legitimate means to cultivate hardiness and vigor.

In apparatus work exercises in the hang and in the support-stand may be of medium difficulty. These exercises should be designed primarily for increasing skill, also for increasing the strength of the arms and of the abdominal muscles.

The essentials demanded in the gymnastic lesson are:—

- (a) Good posture.
- (b) Free exercises of a medium degree of difficulty performed with energy and precision.
- (c) Rhythmic steps of medium difficulty executed with good finish.
- (d) Apparatus work of medium difficulty, track and field work, and games.

### Third Group—For Pupils 12, 13, 14 and 15 Years of Age School Grades 7 and 8

A characteristic of this age-period is an increased rapidity of the growth of the lungs and heart.

Games demanding much running should give to these vital organs the stimulus they need for increased activity. Team games of increasing complexity, but requiring no great endurance, are ideal forms of exercise at this period.

Track and field work should consist of sprinting up to 150 yards, and of endurance runs from 8 to 10 minutes. To the jumping of the former periods should be added low hurdling and pole vaulting. Boys and girls at the end of this period should readily swim one hour, and know the different swimming strokes. In skating, also, they should be adepts. Tramping from 5 to 10 miles is of great value and should be encouraged.

In apparatus work exercises in the hang should require more skill. Momentary support should alternate with mounts, dismounts and vaults. For girls' exercises designed to strengthen the muscles of the back and of the abdomen should predominate.

During the whole lesson, both in free exercises and in apparatus work, the demands upon the skill, agility and strength of the pupils should be increased. Boys especially should have exercises demanding resoluteness, daring and courage.

Up to a short time before puberty there need be no great difference between the exercises for both sexes. With the advent of this change, however, the many valuable exercises in the hang on the ladders, rings, giant strides, etc., offer to the girls the same opportunities for self-activity that the more violent forms of exercise on the bars, buck, etc., offer to boys.

In the physical training work the essentials are:—

- (a) Good posture.
- (b) Vigorous trunk exercises.
- (c) The correct co-ordinations demanded by the more advanced rhythmic steps.
- (d) Apparatus exercises of a fair degree of skill, track and field work, and games.

### Fourth Group—For Pupils from 15 to 20 Years The High School Group

This age-group might be divided into two periods, A from 15 to 17 years, B from 17 to 20 years.

During the first period the boys arrive at puberty. Besides this great physiologic change, another characteristic of this period is the most rapid growth of lungs and heart for both sexes. During the years from 14 to 18 the heart practically doubles its size. Based upon the law that appropriate stimulation of an organ when it is growing most rapidly will produce the best results, heart and lungs at this period of a boy's or girl's life should receive much stimulation by means of suitable exercise. The best exercise to stimulate heart growth is running. Games, therefore, and activities that demand much running, but no severe strain, are most valuable forms of exercise.

The viewpoint determining the selection of gymnastic material for girls is the same as in the preceding period.

The games of both girls and boys now should demand the highest forms of skill, but not much endurance. Running games should give the body much encouragement for vigorous growth. In the selection of physical training material one thing always must be kept in mind; *i. e.*, the body must never be deprived of the material it needs for growth by a boy's participation in men's games, or in activities demanding great endurance. Marathon races of all kinds on land or water, as well as football or basketball games played according to rules designed for adults should not be permitted if the growing youth is expected to develop into vigorous manhood or womanhood.

Track and field work should consist of fast running up to 220 yards; cross-country runs (no speed) up to 30 minutes are permissible. Throwing and putting should be added to the field events of the preceding periods, while swimming, skating, sledding, tramping, rowing and other natural forms of exercise should receive full recognition and unceasing encouragement.

In apparatus work, especially for boys, exercises in the support, and vaulting should now receive attention, while for both sexes the exercises of skill performed in the hang may be increased.

Suitable apparatus work is of special benefit to the high school girl in giving her a training for courage and determination and an impetus to develop initiative which modern life makes increasingly necessary for girls. As creators of "joy in achievement" the "stunts" possible on suitable apparatus are factors of no small importance in guiding a girl's life into proper channels.

During the whole physical training work in the high school period the tendency to select forms of exercise that develop initiative and individuality should predominate. That part of the lesson devoted to free exercises,

therefore, should be short and be filled with vigorous physical work demanding not too much concentration.

The characteristics of a gymnastic lesson should be:—

(a) A sustained effort to increase good posture.

(b) Vigorous trunk exercises, made more valuable and interesting by the frequent use of suitable hand apparatus.

(c) Rhythmic steps demanding (especially for girls) difficult co-ordinations.

(d) Apparatus work demanding skill, track and field work, and games.

*During the second period of this age-group, 17 to 20 years, the young man is gradually nearing maturity. As a rule height has reached its maximum and breadth begins its development.*

His games may now demand a medium amount of endurance. With boys the musculature now is becoming strong enough to allow the gradual introduction of strength exercises like wrestling, putting the shot, putting up of medium-weight dumbbells, and the countless forms of exercises upon apparatus.

If he has received the training outlined for the preceding years, fast running at all distances and cross-country running up to one hour are permissible. Rowing as a sport may be begun. Training for any one sport should, however, be discouraged. Girls at this age, and later, revel in the highest forms of æsthetic dancing.

With the completion of the twentieth year most men have arrived at maturity. For approximately the next twenty years man can undertake any kind of physical work without this interfering with his bodily development.

Women, organically healthy, may participate with profit in running short distances, in appropriate forms of throwing, in swimming and in other forms of competition requiring no violent effort.

It is doubtful if after puberty it is wise to encourage most women to take part in vigorous athletic competition. Participation in an athletic meet in each case must be decided upon the physical fitness of the participant at this time.

## VII. PRINCIPLES UNDERLYING THE COMBINING OF MOVEMENTS INTO FREE EXERCISES

The elementary movements, also the combinations, always must be adapted to the age and sex, as well as to the mental and physical ability of the pupils.

### 1. Pertaining to the Selection of Simple (Elementary) Exercises.

Only movements having "gymnastic value" should be selected.

The "gymnastic value" of a movement may lie in the fact that it possesses (a) hygienic value; (b) developmental value; (c) postural value; (d) natural co-ordinative value; or (e) a combination of these.

### 2. Pertaining to Trunk Exercises.

Trunk movements should be performed only in an established base. The legs should be fixed before the trunk movements begin. The exceptions to this rule are combinations like the balance-stands, the fall-out and lay-outs. These exercises are not given primarily for the purpose of obtaining a forceful execution of trunk exercises.

### 3. Pertaining to Sequences.

- (a) Sequences should train and develop natural co-ordinations, or
- (b) They should possess value as a means of increasing the effect of combined exercises either in hygienic, postural or developmental directions.

### 4. Pertaining to Synchronous Movements.

Combinations of movements should have not only a physical value, but also an æsthetic and rhythmic value.

- (a) Movements performed simultaneously should have the same "time value;" they should possess "rhythmic similarity."

Where two exercises are performed in alternation they should have the same time value.

- (b) Movements performed simultaneously should possess "harmony of action." This would mean that arm movements of combative origin (thrusting, striking, etc.) *i. e.*, exercises with a psychologic value should be combined primarily with the leg and trunk movements which naturally accompany these (as stepping and lunging), while arm movements of artificial origin (straightening, raising, carrying, etc.), should be used largely to increase the physiologic value, especially of slow trunk exercises.

## 5. Pertaining to Increasing the Difficulty of Co-ordinations.

The progression in difficulty of execution in free exercises is based upon either physical or mental means, or upon a combination of both.

(a) Physical means are:—

- (1) Narrowing the base of support.
- (2) Raising the center of gravity.
- (3) Combinations of the above.

(b) Mental means are:—

- (1) To move the different body-parts used in combinations or in sequences in the same direction; *e. g.*, forward and forward.
- (2) To move them in opposite directions; *e. g.*, forward and backward.
- (3) To move them in different directions; *e. g.*, forward and sideward.

**VIII. Charts Showing Age-Aims (average performances) also, in parentheses, good performances, by ages and sex.**

EVENTS		YEARS 8	9	10	11	12	13	14	15	16	17	18.
<b>Running 50 Yards</b> (In seconds and tenths)	GIRLS	9.4 (9.0)	9.2 (8.8)	8.8 (8.4)	8.6 (8.2)	8.4 (8.0)	8.4 (8.0)	8.4 (7.8)	8.2 (7.6)			
	BOYS	9.0 (8.8)	8.8 (8.6)	8.4 (8.2)	8.2 (8.0)	8.0 (7.6)	7.8 (7.6)	7.6 (7.2)	7.4 (7.0)			
<b>Running 60 Yards</b> (In seconds and tenths)	GIRLS	12.6 (10.0)	12.4 (9.8)	11.6 (9.2)	11.0 (9.0)	10.8 (8.6)	10.8 (8.2)	10.8 (8.6)	11.0 (9.4)			
	BOYS	11.8 (9.4)	11.4 (9.2)	10.8 (9.0)	10.4 (8.8)	10.0 (8.2)	9.8 (8.0)	9.4 (7.6)	9.0 (7.6)			
<b>Running 75 Yards</b> (In seconds and tenths)	GIRLS	15.4 (12.4)	14.6 (11.0)	14.2 (10.4)	13.8 (10.2)	13.6 (10.2)	13.4 (10.4)	14.0 (11.0)	14.4 (11.8)			
	BOYS	14.1 (11.6)	13.6 (10.8)	13.2 (9.8)	12.6 (9.8)	12.2 (9.6)	11.8 (8.8)	11.4 (8.4)	11.0 (8.0)			
<b>Running 100 Yards</b> (In seconds and tenths)	GIRLS	19.2 (18.0)	18.6 (16.8)	17.2 (15.8)	16.8 (15.6)	16.6 (15.6)	16.4 (15.4)	16.2 (15.4)	16.2 (15.2)			
	BOYS	19.2 (18.0)	18.6 (16.8)	17.2 (15.8)	16.2 (15.2)	15.4 (15.0)	15.0 (14.4)	14.2 (13.6)	13.4 (13.0)			
<b>Standing Broad Jump</b> (In feet and inches)	GIRLS	3.0 (4.4)	3.1 (4.6)	3.3 (4.9)	3.6 (5.0)	3.8 (5.3)	3.10 (5.6)	4.0 (6.0)	4.1 (6.0)			
	BOYS	3.4 (4.4)	3.8 (4.10)	4.0 (5.4)	4.3 (5.10)	4.6 (6.3)	4.9 (6.6)	5.2 (6.10)	5.5 (7.4)			
<b>Running Broad Jump</b> (In feet and inches)	GIRLS	5.5 (6.0)	5.6 (6.2)	5.10 (6.8)	6.6 (7.8)	7.2 (8.4)	8.0 (9.0)	9.0 (10.8)	9.0 (11.8)			
	BOYS	6.0 (6.9)	6.6 (7.0)	7.0 (7.6)	8.3 (9.1)	9.6 (10.8)	11.4 (12.2)	12.6 (13.5)	13.5 (14.7)			
<b>Triple Standing Broad Jump</b> (In feet and inches)	GIRLS	10.4 (12.0)	10.6 (12.6)	10.10 (14.2)	12.1 (14.8)	12.5 (15.8)	12.9 (17.0)	13.0 (17.0)	13.10 (17.7)			
	BOYS	12.0 (14.3)	12.3 (14.8)	13.0 (15.9)	14.0 (16.9)	14.6 (18.7)	15.1 (19.0)	16.4 (20.7)	18.1 (22.4)			
<b>Running Hop, Step and Jump</b> (In feet and inches)	GIRLS (10 foot start)	9.2 (11.0)	11.6 (13.9)	13.8 (17.0)	14.6 (18.8)	15.5 (21.4)	15.6 (21.0)	16.4 (21.2)	16.6 (20.0)			
	BOYS (unlimited run)	10.0 (10.6)	13.0 (15.5)	16.4 (20.5)	18.0 (23.0)	18.8 (24.5)	19.9 (26.0)	21.7 (29.0)	23.0 (29.5)			
<b>Running High Jump</b> (In feet and inches)	GIRLS	2.2 (2.6)	2.5 (2.8)	2.8 (2.10)	2.9 (3.0)	2.10 (3.2)	3.2 (3.3)	2.11 (3.1)	2.9 (3.1)			
	BOYS	2.2 (2.8)	2.5 (2.10)	2.8 (3.2)	2.11 (3.4)	3.1 (3.6)	3.4 (3.9)	3.6 (4.2)	3.9 (4.5)			
<b>Basket Ball Overhead Far Throw</b> (In feet and inches)	GIRLS	12.2 (17.0)	13.8 (20.0)	15.5 (25.0)	17.7 (28.0)	19.4 (31.0)	21.3 (35.0)	22.2 (35.0)	23.4 (36.0)			
	BOYS	14.4 (19.0)	16.2 (22.0)	18.2 (26.0)	20.3 (30.0)	23.3 (35.6)	24.1 (37.0)	26.7 (37.6)	29.1 (39.0)			
<b>Basket Ball Round Arm Far Throw</b> (In feet and inches)	GIRLS (one step permitted)	13.4 (25.0)	15.1 (31.0)	17.0 (36.0)	19.3 (38.0)	22.2 (42.0)	25.4 (53.0)	27.8 (55.0)	30.0 (57.0)			
	BOYS (one step permitted)	18.5 (36.0)	22.3 (44.0)	25.6 (47.0)	28.7 (53.0)	32.9 (60.0)	36.9 (70.0)	41.5 (73.0)	46.8 (73.0)			
<b>Indoor Base Ball Far Throw</b> (In feet and inches)	GIRLS (unlimited run)	23.0 (45.0)	25.9 (56.0)	30.6 (60.0)	35.0 (68.0)	43.0 (80.0)	48.9 (87.0)	53.0 (106.0)	53.5 (102.0)			
	BOYS (unlimited run)	37.7 (71.0)	47.4 (86.0)	57.2 (104.0)	67.0 (113.0)	77.2 (120.0)	88.0 (141.0)	102.1 (151.0)	108.1 (187.0)			

## MEMORANDA

## PART II. PHYSICAL TRAINING MATERIAL FOR BOYS

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- I. Tactics. II. Free Exercises. III. Rhythmic Steps. IV. Games.  
Track and Field Work. Miscellaneous Activities.  
V. Apparatus Work.

### FIRST HIGH SCHOOL YEAR

#### I. TACTICS

##### A. *General Tactics.*

1. Form in a double rank, in order of height from right to left, each pupil dropping his left arm as soon as the pupil to the left has correct distance. The rear rank is 40 inches behind the front.
2. Dress right, left.
3. Face right, left, right about, left about, right half, left half.
4. March forward in front and flank formation. March backward. Face upon command.
5. Count off by twos and fours.
6. Wheeling of the double ranks, also of single ranks; quarter and half wheel; from a stand and while marching.

##### B. *Special Tactics.*

School of the Individual.

1. Fall in (double rank).
2. Squad, Attention (Position of the soldier).
3. Parade, Rest.
4. Eyes, Right (left). Front.
5. *Facings.*
  - (a) Right (left) Face. (b) Right (left) half, Face. (c) About, Face.
6. Hand, Salute. Two.
7. *Steps and Marching.*
  - (a) Forward, March (quick time, cadence 120 steps per minute, length of step 30 inches).
  - (b) Double time, March (a run, cadence 180 steps per minute, length of step 36 inches).
  - (c) Mark time, March.
  - (d) Half step, March.
  - (e) Right (left) step, March.
  - (f) Backward, March.
  - (g) Squad, Halt.
  - (h) While marching; By the right (left) flank, March.
  - (i) To the rear, March.
  - (j) Change step, March.

## MEMORANDA

## II. FREE EXERCISES

In high school work exercises without hand apparatus should alternate often with wand exercises, dumb-bell exercises and club swinging.

*The essential exercises* in all high school grades are

- (a) Arms:
  1. Swing and raise the straight arms in all directions.
  2. Straighten, thrust and strike forward, sideward, upward and downward, the starting positions being: "Arms bent upward," "Arms bent to thrust," and "Arms bent to strike."
  3. Circle arms forward, backward, inward, outward.
- (b) Legs:
  1. Swing and raise the straight leg in all directions.
  2. Place the foot in all directions; stride; lunge; fall-out; lay-out.
  3. Raise the knee; foot; heels; bend the knees.
- (c) Trunk:
  1. Lower the trunk forward.
  2. Bend and sway the trunk in all directions.
  3. Turn the trunk; circling.
- (d) Exercises of the neck (head) should be combined with appropriate arm and trunk exercises.

### *Co-ordinations.*

- (a) Review the simple co-ordinations of the grammar grades.
- (b) Four movement sequences of one body-part, performed in the same direction.
- (c) Combinations of two body-parts.
- (d) Intersections.
- (e) Club-swinging.
  1. Arm circles with one and with both arms, forward, backward, outward, inward, left and right. Half circles.
  2. Hand circles with both hands forward, backward, outward and inward; the circles height of shoulders.
  3. Combined arm and hand circles with one and with both arms forward, backward, outward, inward, left and right; the hand circles behind the bent arms and the shoulders.

NOTE.—Where appropriate, combine the club exercises with trunk bending, lunging, knee-bending, etc.

## MEMORANDA

### III. RHYTHMIC STEPS

#### A. *Marching Steps.*

- (1) Marching in common time; *i. e.*, 135 steps per minute; in fast time; *i. e.*, 150 to 160 steps per minute (arms swinging naturally).
- (2) Leg movements while marching and running: On toes, raising and swinging the knees, raising and swinging the straight leg.
- (3) Marching with two- and four-movement arm exercises, a movement on the first of four (two) steps.

#### B. *Dancing Steps.*

Review the gymnastic dancing steps of the grammar grades; *i. e.*,

- (a) *Polka Rhythm*.—Glide; Gallop; Skip-step; Step-hop; Glide-hop; Change-step; Swing-hop; Balance-hop; Polka-hop; Cut backward, forward, sideward; Cut-hop.
- (b) *Mazurka Rhythm*.—(1) Repeat suitable steps enumerated under (a) and adapt to the mazurka rhythm. (2) Three-step; mazurka-hop.
- (c) *Schottische Rhythm*.—(1) Repeat suitable steps enumerated under (a) and adapt to the schottische rhythm. (2) Three-step-swing-hop.
- (d) *Waltz Rhythm*.—Balance-step; Step and curtsy; Swing-hop.

#### C. *Appropriate Character and Folk Dances.*

# MEMORANDA

#### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

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##### A. *Games.*

1. Review the vigorous games of the lower grades, especially the team games like dodgeball, captainball, battleball, and volleyball,
2. Teach the fundamentals of baseball, soccer, handball, basketball, and tennis.

##### B. *Track and Field Events.*

1. Standing and running high and broad jump, hop-step and jump, and triple standing jump.
2. Short races, relay races, 50, 75 and 100 yards.
3. Fundamentals of shot-put (8 lbs.), hurlball (4 lbs.).
4. Endurance runs, 3 to 6 minutes.

##### C. *Miscellaneous Activities.*

###### 1. *Swimming.*

Swimming is an essential physical training activity.

High school boys should be able to swim from one-half to one hour, and to show the breast, side, and back strokes. They should also know the simple forms of diving.

###### 2. *Walking.*

Tramping trips into the country should be encouraged during all seasons.

###### 3. *Skating.*

Boys should be able to skate forward and backward, also to perform some of the simple forms of fancy skating.

###### 4. *Sledding.*

Sledding and coasting should be encouraged whenever the weather is favorable.

###### 5. *Camping, Boating.*

In fact all sane forms of outdoor life should always be furthered by forming and directing organizations among the pupils devoted to such activities.

## MEMORANDA

## V. APPARATUS WORK

### *Horizontal Bar—Low and Head-High.*

~~Easy vaults, knee swing up, hip-circle backward~~; hip-circle backward; leg-swing inward and outward; turn-over backward between arms (under the bar). 6

### *Parallel Bars—Low Bars.*

~~Easy vaults from a run and stand, without and with turns; run and jump to cross and side-seat~~; easy dismounts; arm and leg exercises in support-lying. 6

### *Side Horse.*

~~Kneeling and squatting exercises.~~ Vaults from a run and stand. Mounts and dismounts. Leg-swings and circles with one leg outward and inward. Easy change-seats from croup to neck and vice versa. Scissors backward. 6

### *Long Horse.*

~~Support-lying~~; riding-seat; side-seat; straddle off without and with turns. Easy vaults. 5

### *Rings. Head-high.*

Hang-stand with arm and leg movements. Circling of body, feet fixed. Short-swing. Double leg circling. Pendulum swings (running start) with turns. Leg positions while swinging. Jump-high.

Arm and leg exercises in the bent-arm hang. 7

### *Poles and Ropes.*

Climbing (with hands and feet). ~~Attempts at hand-over-hand (hand climbing).~~ Between two poles: arm and leg exercises; turn over to inverted squat hang (bent knees), also to hang rearways. Pendulum swing. Pendulum vault. 6

### *Horizontal Ladder, also Boom.*

Hanging and traveling exercises—forward, sideward, and backward on beams and rounds; arm and leg exercises.

### *Traveling Rings.*

Travel the entire distance—straight body—good form.

### *Balance Beam.*

Walking forward; walking with leg and arm movements. Arm and leg exercises in the support-stand and hang-stand. Easy mounts, dismounts and vaults.

### *Tumbling.*

Rolls forward and backward without and with turns, with or without use of the hands, from a stand or from a run.

## MEMORANDA

## MEMORANDA

# MEMORANDA

## SECOND YEAR'S WORK

### I. TACTICS

#### A. *General Tactics.*

1. Review the tactics of the preceding year.
2. Review the marching movements at a run.
3. In single ranks: Forming and transforming in the ranks (from front to flank and vice versa).

#### B. *Special Tactics.*

##### School of the Squad.

A squad consists of 8 pupils formed in double rank.

1. Review the tactics of the preceding year.
2. Facings, steps, marching like in the school of the soldier.
3. Form squads, Count Off.
4. Right (left), Dress. Front.
5. When marching: Guide right (left).
6. At a halt
  - (a) Take interval, To the right (left), March. Squad, Halt.
  - (b) Assemble to the right (left), March.
7. When at a halt and having counted off:
  - (a) Take distance, March. Squad, Halt.
  - (b) Assemble, March.

##### *Marching.*

8. Right (left) oblique, March. Forward, March (or Halt).
9. To turn on a moving pivot:
  - (a) Right (left) turn, March.
  - (b) Right (left) half turn, March.
10. To turn on a fixed pivot: (a) Squad right (left), March.
11. Being in line, to turn about and march: Squad right (left) about, March.

## MEMORANDA

## II. FREE EXERCISES

The essential exercises are the same as indicated for the first year, page 23.

### *Co-ordinations.*

- (a) Review the co-ordinations of the first year.
- (b) Four-movement sequences of one body-part.
- (c) Four-movement sequences of two parts of the body, the movements first in the same direction and later in opposite directions.
- (d) *Club-swinging.*
  1. Arm circles with one and with both arms forward and backward, on the opposite side of the body.
  2. Arm and hand circles outward and inward, the hand circles in front and rear of thighs, later in front and rear of the arms raised upward.
  3. Arm and hand circles forward with one and with both arms, the arm circle at the opposite side of the body, the hand circle at the shoulder.
  4. Groups of easy exercises, to be swung to music.

NOTE.—Where appropriate, combine the club exercises with trunk bending, lunging, knee-bending, etc.

## III. RHYTHMIC STEPS

### *A. Marching Steps.*

- (1) Marching in common time and in fast time.
- (2) Leg movements while marching and running.
- (3) Marching with two- and four-movement arm exercises, a movement on the first of four (two) steps.

### *B. Dancing Steps.*

- (1) Review the steps of the preceding grade in the four principal rhythms, i. e., (a) Polka rhythm, (b) Mazurka rhythm, (c) Schottische rhythm, (d) Waltz rhythm.
- (2) Alternate marching steps with dancing steps.
- (3) Combine two steps of like rhythm.

### *C. Appropriate Character and Folk Dances.*

## IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

### *A. Games.*

1. Develop the finer points of the team games of the preceding grades.
2. Increase the difficulty of the more vigorous gymnastic games.

### *B. Track and Field Events.*

1. Review previous events; work for the correct form.
2. Low hurdles, pole vault.
3. Shot-put (8 lbs.), hurlball (4 lbs.).
4. Endurance runs, 4 to 8 minutes.

**MEMORANDA**

### C. *Miscellaneous Activities.*

1. Read the remarks under this heading in the first year's work. Make it your business to find out something definite about every boy's outdoor life. Where necessary, speak to the boys who need to form the habit of sane outdoor recreative activity.

## V. APPARATUS WORK

Review the apparatus work of the first grade.

### *Horizontal Bar—Low Bar.*

Knee-circle forward. Crotch-circle backward. Underswing from stand and from support. Easy vaults at the end of exercises.

### *Head- and Jump High.*

Turn over backward; hip and knee-circles; swinging in the knee-hang; acquiring the swing-start (on the high bar).

### *Parallel Bars—Low Bars* (for advanced squads, high bars).

Vaults from the seat in the middle of the bars, without and with turns. Exercises in the straight arm support. Roll forward from a seat to a straddle seat. Shoulder stand.

### *Side Horse.*

Vaults from the stand and from the support. Leg-circles inward and outward. Scissors forward. Easy vaults at the end of exercises.

### *Long Horse.*

Support-lying; straddle-vault dismount; scissors backward and forward; vaults from the side; vaults with quarter turns.

### *Rings.*

*Head-high.*—Leg exercises in the straight and in the inverted hang.

Turn-over; cut-off (one leg, one hand); leg exercises in the bent-arm hang.

*Jump-high.*—Pendulum swings, half turns at end of swing. Arm and leg exercises while swinging.

### *Poles and Ropes.*

Hand-over-hand from a stand, distance 10 feet. Between two poles: inverted hang and turn-over backward, also forward, with added leg movements; pendulum swing with leg positions. Pendulum vaults.

### *Horizontal Ladder, also Boom.*

Hanging with leg exercises (straight and bent arms). Traveling on beams and rounds with leg positions (straight and bent arms).

### *Traveling Rings.*

Travel the entire distance—whole turn of body between each two rings.

### *Balance Beams.*

Running and skipping on the beam. Arm and leg movements in the support. Mounts, dismounts and vaults.

### *Tumbling.*

Head stand with assistance. Cart wheel. Diving.

# MEMORANDA

## MEMORANDA

## MEMORANDA

## THIRD YEAR'S WORK

### I. TACTICS

#### A. *General Tactics.*

1. Review the tactics of the preceding grades; marching and running.
2. When formed in single ranks of four: Wheeling combined with forming, and vice versa (a) from a stand, (b) while marching, (c) while running.

#### B. *Special Tactics.*

##### School of the Company.

A company is divided into two, three or four platoons, each consisting of not less than two nor more than four squads.

1. Review the tactics of the preceding years.
2. Movements on a fixed pivot—see pages 50 and 51 of "Infantry Drill Regulations," 1911.
3. Movements on the moving pivot—see pages 51 and 52.
4. Facings or marchings to the rear—see page 51.
5. On the right or left into line—page 51.
6. Front into line—page 52.
7. To diminish the front of a column of squads—page 54.
8. Extended order—pages 55, 56.
9. The assembly—page 57.

### II. FREE EXERCISES

The essential exercises are the same as indicated for the first year—page 23.

#### *Co-ordinations.*

- (a) Review the co-ordinations of the preceding grades.
- (b) Four-movement combined exercises (of two parts of the body) performed first in the same direction and later in different directions.
- (c) Two-movement combined exercises of three parts of the body performed in opposite and in different directions.
- (d) *Club-swinging.*

1. Arm and hand circles forward, backward, outward, inward, right and left, the movement consisting of one arm circle and three hand circles, the hand circles to be swung in different places.
2. Arm circles and parts of circles with tipping the clubs on the arms, and then hand circles.
3. Alternate sets of swings in sixteen or thirty-two counts with rhythmic steps, or with marching a like number of counts.
4. Arrange sets of easy exercises to music.

NOTE.—Whenever appropriate, combine the club exercises with trunk and leg exercises.

# MEMORANDA

### III. RHYTHMIC STEPS

#### A. *Marching Steps.*

- (1) Marching in common time and in fast time.
- (2) Leg movements while marching and running.
- (3) Marching with two- and four-movement arm exercises, a movement off the first of two steps, later on each step.

#### B. *Dancing Steps.*

- (1) Review the steps of the preceding grades.
- (2) Alternate marching steps with dancing steps.
- (3) Combine steps of like rhythms.

#### C. *Appropriate Character Dances.*

### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

#### A. *Games.*

1. Develop the finer points of the team games of the preceding grades.
2. Review the vigorous gymnastic games.

#### B. *Track and Field Work.*

1. Review the events of the preceding grades, calling attention to the finer points to be worked for.
2. High hurdles.
3. Shot-put (8 lbs.), hurlball (4 lbs.).
4. Endurance runs, 5 to 10 minutes.
5. Combine two or more events into medley races.

#### C. *Miscellaneous Activities.*

1. See the remarks under this heading in the first year's work. Keep after the boys who do not lead a natural outdoor life. Show them the error of their ways.

## MEMORANDA

## V. APPARATUS WORK

Review the apparatus work of the lower grades.

### *Horizontal Bar—Low.*

Toe-swing-off to stand.

Kipp from running forward, also from a jump to an inverted balance-hang. Leg swings inward and outward. Underswing at end of exercise.

*Head-and Jump-high.*—Hip swing-up to support. Crotch, and knee-circles forward and backward; swing-off from a free knee-hang to stand; leg exercises while swinging. Easy combinations.

### *High Parallel Bars.*

Swinging in the upper-arm hang. Exercises in the forearm support; shoulder stand; roll forward and backward to a straddle seat. Easy combinations, ending with vaults.

### *Side Horse.*

Circles outward and inward with one leg. Flank swings. Feint with one leg, and vault. Scissors sideward. Vaults with half turns.

### *Long Horse.*

Long straddle vault (for advanced pupils). Roll forward from squat-stand on the horse. Vaults with half turns. Fencers vaults.

### *Rings.*

*Head-high.*—Bent-arm hang. Pendulum swing with arm and leg exercises. Cut-off (two legs, one hand). Bent-arm support.

*Jump-high.*—Pendulum swing, bend arms at the end of swing. Leg exercises. Swing in the inverted hang.

### *Poles and Ropes.*

Hand-over-hand from stand, also from a seat on the floor, distance 15 feet. Between two poles: inverted hang, partway up the poles. Pendulum swing and vault (rope raised gradually).

### *Horizontal Ladder, also Boom.*

Swinging, turning, hand jumping. Skipping rounds. Turn over. Exercises in the inverted hang.

### *Traveling Rings.*

While traveling cut-off (one leg, rear hand).

### *Balance Beam.*

Passing another on the beam. Sitting and rising on the beam. Mounts, dismounts and vaults with quarter and half turns.

### *Tumbling.*

Hand springs with assistance. Head stand. Hand stand. Round off. Head and hand spring.

## MEMORANDA

MEMORANDA

MEMORANDA

## FOURTH YEAR'S WORK

### I. TACTICS

---

#### A. *General Tactics.*

Review the tactics of the preceding grades. Combine alternations in marching and running.

#### B. *Special Tactics.*

Review the tactics of the soldier, the squad and the company.

### II. FREE EXERCISES

---

The essential exercises are the same as indicated in the first year, page 23.

#### *Co-ordinations.*

(a) Review the co-ordinations of the preceding grades.

(b) *Club-swinging.*

1. Alternate sets of swings in eight or sixteen counts with marching a similar number of counts, (a) marching forward and backward, (b) marching sideward to and fro, (c) marching in a square.

2. Sets of exercises arranged to music.

### III. RHYTHMIC STEPS

---

#### A. *Marching Steps.*

(1) Alternate marching in common time with running, and with fast time.

(2) Combined arm and leg movements while marching.

#### B. *Dancing Steps.*

(1) Review the steps in the four principal rhythms.

(2) Add vigorous arm movements to appropriate steps.

(3) Combine steps of like rhythms.

#### C. *Appropriate Character Dances.*

### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

---

#### A. *Games.*

1. Develop the finer points of the team games of the preceding grades.

2. At times review the essential vigorous gymnastic games.

#### B. *Track and Field Events.*

1. Review the events of the preceding grades. Expect them to be performed in good form.

2. Increase the endurance runs to 10-20 minutes.

#### C. *Miscellaneous Activities.*

1. See the remarks under this heading in the first year's work. Keep track of the boys who do not lead a natural outdoor life; encourage them to do so.

MEMORANDA

## V. APPARATUS WORK

Review the apparatus work of the lower grades.

### *Horizontal Bar—Low.*

Leg circles inward and outward. Easy combinations, ending with a vault.

*Head- and Jump-high.*—Arch circle with bent arms. Hip circle backward. Kipp. Swing-rise. Easy combinations.

### *High Parallel Bars.*

Run and jump to the straight arm support. Swing. Vaults. Kipp. Swing-rise backward. Roll forward from the shoulder stand to a straddle seat, also to an upper-arm hang. Exercises from the side, and also from a stand between the bars. Easy combinations, ending with a vault.

### *Side Horse.*

Double rear vault mount.—Feint with both legs and vault; straddle vault.

Long (Pike) vault.—Stride (Thief) vault. Easy combinations, ending with a vault.

### *Long Horse.*

Long straddle vault. Roll backward from straddle seat on horse. Combined vaults. Fencers vaults with turns.

### *Rings.*

*Head-high.*—Straight arm support; leg exercises; short swing.

*Jump-high.*—Pendulum swing; arm and leg exercises; one leg cut-off. Easy combinations.

### *Poles and Ropes.*

Hand-over-hand, 20 feet. Between two poles: hand traveling up and downward; hand jumping.

### *Horizontal Ladder, also Boom.*

Hanging and traveling, with arm and leg exercises. Hip swing-up to the upper side of the ladder. Slow hip swing-off forward.

### *Traveling Rings.*

While traveling cut-off over rear hand, with both legs.

### *Balance Beam.*

Difficult leg exercises on the beam. Sitting and rising. Vaults with turns. Combine several appropriate vaults.

### *Tumbling.*

Hand spring. Diving for height and distance. Kipp (snap up). Hand stand.

## MEMORANDA

**MEMORANDA**

# MEMORANDA

## PART III. PHYSICAL TRAINING MATERIAL FOR GIRLS.

- I. Tactics. II. Free Exercises. III. Rhythmic Steps. IV. Games.  
Track and Field Work. Miscellaneous Activities.  
V. Apparatus Work.

### FIRST HIGH SCHOOL YEAR

#### I. TACTICS

##### A. *General Tactics.*

1. Form in a double rank, in order of height from right to left, each pupil dropping her left arm as soon as the pupil to the left has correct distance. The rear rank is 40 inches behind the front.
2. Dress right, left.
3. Face right, left, right about, left about, right half, left half.
4. March forward in front and flank formation. March backward. Face upon command.
5. Count off by twos and fours.
6. Wheeling of the double ranks, also of single ranks; quarter and half wheel; from a stand and while marching.

##### B. *Special Tactics* (for special occasions).

###### School of the Individual.

1. Fall in. (double rank).
2. Squad, Attention (Position of the soldier).
3. Parade, Rest.
4. Eyes, Right (left). Front.
5. *Facings.*  
(a) Right (left) Face. (b) Right (left) half, Face. (c) About, Face.
6. Hand, Salute. Two.
7. *Steps and Marching.*  
(a) Forward, March (quick time, cadence 120 steps per minute, length of step 30 inches).  
(b) Double time, March (a run, cadence 180 steps per minute, length of step 36 inches).  
(c) Mark time, March.  
(d) Half step, March.  
(e) Right (left) step, March.  
(f) Backward, March.  
(g) Squad, Halt.  
(h) While marching; By the right (left) flank, March.  
(i) To the rear, March.  
(j) Change step, March.

**MEMORANDA**

## II. FREE EXERCISES

In high school work exercises without hand apparatus should alternate often with wand exercises, dumb-bell exercises and club swinging.

*The essential exercises in all high school grades are*

- (a) Arms:
  1. Swing and raise the straight arms in all directions.
  2. Stretch, straighten, thrust and strike forward, sideward, upward and downward, the starting positions being: "Arms bent upward," "Arms bent to thrust," and "Arms bent to strike."
  3. Circle arms forward, backward, inward, outward.
- (b) Legs:
  1. Swing and raise the straight leg in all directions.
  2. Place the foot in all directions; stride; straddle; lunge; fall-out; lay-out.
  3. Raise the knee; foot; heels; bend the knees.
- (c) Trunk:
  1. Lower the trunk forward.
  2. Bend and sway the trunk in all directions.
  3. Turn the trunk; circling.
- (d) Exercises of the neck (head) should be combined with appropriate arm and trunk exercises.

### *Co-ordinations.*

- (a) Review the simple co-ordinations of the grammar grades.
- (b) Four movement sequences of one body-part, performed in the same direction.
- (c) Combinations of two body-parts.
- (d) Intersections.
- (e) Club-swinging.
  1. Arm circles with one and with both arms, forward, backward, outward, inward, left and right. Half circles.
  2. Hand circles with both hands forward, backward, outward and inward; the circles height of shoulders.
  3. Combined arm and hand circles with one and with both arms forward, backward, outward, inward, left and right; the hand circles behind the bent arms and the shoulders.

NOTE.—Where appropriate, combine the club exercises with trunk bending, lunging, knee bending, etc.

## MEMORANDA

### III. RHYTHMIC STEPS

#### A. *Marching Steps.*

- (1) Marching in common time; *i. e.*, 135 steps per minute; in fast time; *i. e.*, 150 to 160 steps per minute (arms swinging naturally).
- (2) Leg movements while marching and running: On toes, raising and swinging the knees, raising and swinging the straight leg.
- (3) Marching with two- and four-movement arm exercises, a movement on the first of four (two) steps.

#### B. *Dancing Steps.*

Review the gymnastic dancing steps of the grammar grades; *i. e.*,

- (a) *Polka Rhythm*.—Glide; Gallop; Skip-step; Step-hop; Glide-hop; Change-step; Swing-hop; Balance-hop; Polka-hop; Cut backward, forward, sideward; Cut-hop.
- (b) *Mazurka Rhythm*.—(1) Repeat suitable steps enumerated under (a) and adapt to the mazurka rhythm. (2) Three-step; mazurka-hop.
- (c) *Schottische Rhythm*.—(1) Repeat suitable steps enumerated under (a) and adapt to the schottische rhythm. (2) Three-step-swing-hop.
- (d) *Waltz Rhythm*.—Balance-step; Step-curtsey; Swing-hop.

#### C. *Appropriate Character and Folk Dances.*

#### D. *Aesthetic Dancing.*

The essential arm, leg and foot exercises should be taught.

### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

#### A. *Games.*

- (a) Review the more vigorous gymnastic games of the lower grades, also team games like dodgeball, battleball, endball, captainball, volleyball.
- (b) Teach the fundamentals of tennis, baseball and basketball, choosing such games as your facilities permit you to play.

#### B. *Track and Field Events.*

- (a) Standing and running high, broad jump, and hop-step and jump (form, not height or distance).
- (b) Endurance runs: 2 minutes.  
Short races, relay races, 50 to 75 yards.
- (c) Hurlball far-throw, from a stand and from a run, also with a turn.

## MEMORANDA

### C. *Miscellaneous Activities.*

#### 1. *Swimming.*

Swimming is an essential physical training activity.

High school girls should be able to swim from one-half to one hour, and to show the breast, side, and back strokes. They should also know the simple forms of diving.

#### 2. *Walking.*

Tramping trips into the country should be encouraged during all seasons.

#### 3. *Skating.*

Girls should be able to skate forward and backward, also to perform some of the simple forms of fancy skating.

#### 4. *Sledding.*

Sledding and coasting should be encouraged whenever the weather is favorable.

#### 5. *Camping, Boating.*

In fact all sane forms of outdoor life should always be furthered by forming and directing organizations among the pupils devoted to such activities.

## V. APPARATUS WORK

### *Side Horse.*

Support:—Side-support on both pommels in the saddle, frontways and rearways.

Mounts and Dismounts:—Knee- and squat-mounts. Leg-swing-mount and front-vault-mount on the croup and neck, and into the saddle.

Change-seat:—By means of leg swings from croup to neck, or into the saddle.

Vaults:—Squat-vault, front-vault, flank-vault.

### *Swinging Rings.*

Jump-high:—Leg exercises. Raise knees (eventually eight times), short swing, pendulum swing in good form.

Head-high:—Arm and leg exercises. Jump to bent-arm hang; then raise knees, short swing, pendulum swing, sink down slowly.

Chest-high:—Arm and leg exercises. Hangstand frontways, rearways and sideways by slow straightening of arms and sinking. Hangstand frontways and bend arms. Hangstand and raise one knee, or raise one leg.

## MEMORANDA

### *Poles and Ropes.*

Most exercises on the rings can also be executed on the poles and ropes. The characteristic movements on the poles, however, are the climbing exercises. The correct climbing position must first be taught, then teach the climbing up as well as downward. Later, while climbing, change from one pole to the next. Do not allow sliding downward. Climbing should be executed first on stationary poles and ropes, and later on swinging poles or ropes.

### *Horizontal Ladder, also Boom.*

Reach-high:—Cross-hang and side-hang. Leg exercises, traveling sideward and forward.

Waist, also Knee-high:—Arm and leg exercise in the lying-support and the lying-hang frontways. Trunk exercises in sitting on the ladder. Many of these exercises can be performed also on the boom.

### *Vertical Ladder.*

On Ladder and Floor:—Standing front-, rear-, and sideways. Arm, trunk, and leg exercises.

On Ladder:—Hang-stand frontways. Arm, trunk, and leg exercises. Hang with leg exercises. Walking up and down the ladder frontways.

### *Oblique Ladder.*

Many of the exercises of the horizontal or the vertical ladder can be performed on the upper or the under side of the oblique ladder. Some exercises are thereby made easier; some, more difficult.

### *Balance Beam.*

Low Beam:—Standing on the beam, walking, also leg exercise. Stand on beam and jump off. Walking forward, forward with leg raisings in various directions, follow-step, etc.

Chest-high:—Easy mounts, dismounts and vaults.

### *Giant Stride.*

Marching, running, and flying. Running sideward. Flank formation, marching and running forward (one or both hands grasping the ladder). Short flight.

### *Traveling Rings.*

The characteristic exercise on this piece of apparatus is the traveling from one ring to the next. Grasp two rings, swing sideward, bending and straightening the arms. Travel with half turns. Travel with various leg positions.

## MEMORANDA

## MEMORANDA

MEMORANDA

## SECOND YEAR'S WORK

### I. TACTICS

#### A. *General Tactics.*

1. Review the tactics of the preceding year.
2. Review the marching movements at a run.
3. In single ranks: Forming and transforming in the ranks (from front to flank and vice versa).

#### B. *Special Tactics.*

##### School of the Squad.

A squad consists of 8 pupils formed in double rank.

1. Review the tactics of the preceding year.
2. Facings, steps, marching like in the school of the soldier.
3. Form squads, Count Off.
4. Right (left), Dress. Front.
5. When marching: Guide right (left).
6. At a halt
  - (a) Take interval, To the right (left), March. Squad, Halt.
  - (b) Assemble to the right (left), March.
7. When at a halt and having counted off:
  - (a) Take distance, March. Squad, Halt.
  - (b) Assemble, March.

##### *Marching.*

8. Right (left) oblique, March. Forward, March (or Halt).
9. To turn on a moving pivot:
  - (a) Right (left) turn, March.
  - (b) Right (left) half turn, March.
10. To turn on a fixed pivot: (a) Squad right (left), March.
11. Being in line, to turn about and march: Squad right (left) about, March.

## MEMORANDA

## II. FREE EXERCISES

The essential exercises are the same as indicated for the first year, page 57.

### *Co-ordinations.*

- (a) Review the co-ordinations of the first year.
- (b) Four-movement sequences of one body-part.
- (c) Four-movement sequences of two parts of the body, the movements first in the same direction and later in opposite directions.
- (d) *Club-swinging.*
  1. Arm circles with one and with both arms forward and backward, on the opposite side of the body .
  2. Arm and hand circles outward and inward, the hand circles low in front and rear of thighs, later in front and rear of arms raised upward.
  3. Arm and hand circles forward with one and with both arms, the arm circle at the opposite side of the body, the hand circle at the shoulder.
  4. Groups of easy exercises, to be swung to music.

NOTE.—Where appropriate, combine the club exercises with trunk bending, lunging, knee-bending, etc.

## III. RHYTHMIC STEPS

### A. *Marching Steps.*

- (1) Marching in common time and in fast time.
- (2) Leg movements while marching and running.
- (3) Marching with two- and four-movement arm exercises, a movement on the first of four (two) steps.

### B. *Dancing Steps.*

- (1) Review the steps of the preceding grade in the four principal rhythms, i. e., (a) Polka rhythm, (b) Mazurka rhythm, (c) Schottische rhythm, (d) Waltz rhythm.
- (2) Alternate marching steps with dancing steps.
- (3) Combine two steps of like rhythm.

### C. *Appropriate Character and Folk Dances.*

### D. *Aesthetic Dancing.*

Review the arm, foot, and leg positions of the preceding grade. Exercises of the arms, legs, and trunk in two and four-count combinations.

Leap (*jeté*), balance-hop (*arabesque*), Leap rocking-step (*pas de basque*) sideward, Pirouette.

## MEMORANDA

#### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

##### A. *Games.*

1. Develop the finer points of the team games of the preceding grades.
2. Increase the difficulty of the more vigorous gymnastic games.

##### B. *Track and Field Events.*

- (a) Review previous events: work for correct form.
- (b) Endurance runs for 3 minutes. Review races, short and medium distance—50, 75 and 100 yards.
- (c) Low hurdles for form.

##### C. *Miscellaneous Activities.*

1. Read the remarks under this heading in the first year's work. Make it your business to find out something definite about every girl's outdoor life. Where necessary, speak to the girls who need to form the habit of sane outdoor recreative activity.

#### V. APPARATUS WORK

Review the apparatus work of the first grade.

##### *Side Horse.*

Support:—Free support; also free support with leg exercises, *e. g.*, raising heels; knees, cross and side straddle.

Mounts and Dismounts:—Rear-vault mount and dismount. Front- and rear-vault mounts and dismounts with quarter turns. Knee-jump (courage-jump) forward.

Change-seats:—By means of leg-swings. Scissors backward.

Vaults:—Squat-, flank-, and rear-vault with quarter turns.

##### *Swinging Rings.*

Jump-high:—Leg and trunk exercises. Raise knees chest high. Short swing to half turn-over with bent knees. Pendulum swing, raise knees at the end of back swing, lower at fore-swing.

Head-high:—Arm, leg and trunk exercises. Jump to bent-arm-hang; then short swing and raise knees to a half turn-over; then pendulum swing, raising knees at the end of back-swing.

Run forward, swing, and execute a half turn left. Repeat right.

Chest-high:—Arm, leg and trunk exercise. Hang-stand frontways, release one hand (with a quarter turn) and regain hold. Change from frontways to rearways by jumping. Change from frontways to rearways by bending and straightening arms.

MEMORANDA

*Poles and Kopes.*

See work and notes for preceding grade.

*Horizontal Ladder, also Boom.*

Jump-high:—Cross-hang and side-hang. Arm, trunk and leg exercises.

Side-hang, travel sideward with swinging sideward; also travel forward; also travel with quarter- and half-turns; with turns.

Waist and Knee-high:—Arm, trunk and leg exercises in the lying-support frontways. Cross-seat with trunk and arm exercises.

Trunk exercises in sitting on the ladder.

*Vertical Ladder.*

On Ladder and Floor:—Stand front-, rear-, and sideways. Arm, trunk, and leg exercises.

On Ladder:—Hang-stand rearways. Arm, trunk, and leg exercises. Hang rearways with leg exercises. Walking up and down the ladder front- and rearways.

*Oblique Ladder.*

See work of preceding grade.

*Balance Beam.*

Low Beam:—Walking, steps, hopping, and turning. Walking sideward. Walking forward with half turns. Gallop forward. Change-step.

Chest-high:—Easy vaults. Flank vault. Front vault with turns.

*Giant Stride.*

Running and flying, run with leg exercises, tiptoe flying with long strides (giant strides).

*Traveling Rings.*

See work of preceding grade.

## MEMORANDA

## MEMORANDA

## MEMORANDA

## THIRD YEAR'S WORK

### I. TACTICS

#### A. *General Tactics.*

1. Review the tactics of the preceding grades; marching and running.
2. When formed in single ranks of four: Wheeling combined with forming, and vice versa (a) from a stand, (b) while marching, (c) while running.

#### B. *Special Tactics.*

##### School of the Company.

A company is divided into two, three or four platoons, each consisting of not less than two nor more than four squads.

1. Review the tactics of the preceding years.
2. Movements on a fixed pivot—see pages 50 and 51 of "Infantry Drill Regulations," 1911.
3. Movements on the moving pivot—see pages 51 and 52.
4. Facings or marchings to the rear—see page 51.
5. On the right or left into line—page 51.
6. Front into line—page 52.
7. To diminish the front of a column of squads—page 54.
8. Extended order—pages 55, 56.
9. The assembly—page 57.

### II. FREE EXERCISES

The essential exercises are the same as indicated for the first year, page 57.

#### *Co-ordinations.*

- (a) Review the co-ordinations of the preceding grades.
- (b) Four-movement combined exercises (of two parts of the body) performed first in the same direction and later in different directions.
- (c) Two-movement combined exercises of three parts of the body performed in opposite and in different directions.
- (d) *Club-swinging.*
  1. Arm and hand circles forward, backward, outward, inward, right and left, the movement consisting of one arm circle and three hand circles, the hand circles to be swung in different places.
  2. Arm circles and parts of circles with tipping the clubs on the arms, and then hand circle.
  3. Alternate sets of swings in sixteen or thirty-two counts with rhythmic steps, or with marching a like number of counts.
  4. Arrange sets of easy exercises to music.

**NOTE.**—Whenever appropriate, combine the club exercises with trunk and leg exercises.

## MEMORANDA

### III. RHYTHMIC STEPS

#### A. *Marching Steps.*

- (1) Marching in common time and in fast time.
- (2) Leg movements while marching and running.
- (3) Marching with two- and four-movement arm exercises, a movement on the first of two steps, later on each step.

#### B. *Dancing Steps.*

Cross-step turn (full turn) combined with suitable steps.  
 Glide-hop-cut with combinations. Mazurka sideward, and obliquely forward combined with different steps. Schottische combinations.  
 Swing-hop with combinations. Waltz step.

#### C. *Appropriate Character and Folk Dances.*

#### D. *Aesthetic Dancing.*

Exercise of the arms, legs and trunk in two and four-movement combinations. Scissors-hop (pas de sisonne). Front and rear cut with additional leg swings (coupé dessous and coupé dessus).

### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

#### A. *Games.*

1. Develop the finer points of the team games of the preceding grades.
2. Review the vigorous gymnastic games.

#### B. *Track and Field Work.*

- (a) Review previous events.
- (b) Endurance runs, 4 minutes.

#### C. *Miscellaneous Activities.*

1. See the remarks under this heading in the first year's work. Keep after the girls who do not lead a natural outdoor life. Show them the error of their ways.

### V. APPARATUS WORK

Review the apparatus work of the lower grades.

#### *Side Horse.*

Support:—Free support several times successively; also with leg exercises.

Mounts and Dismounts:—With quarter and half turns.

Change Seat:—With quarter and half turns backward, and with scissors backward.

Vaults:—Squat-, front-, flank-, and rear-vaults with quarter and half turns.

## MEMORANDA

*Swinging Rings.*

**Jump-high:**—Leg and trunk exercises. Raise knees to a half turn-over.

Short swings to a half turn-over with straight legs. Pendulum swings with swinging legs forward and backward (short swing).

**Head-high:**—Arm, leg and trunk exercises. Bent-arm-hang, short-swing, raise knees to a half turn-over. Bent-arm-hang, short-swing and raise straight legs to a half turn-over. Bent-arm-hang, pendulum swing, slowly straighten the arms and raise the knees. Hold on one ring (with both hands), run forward and execute a half turn at the end of each swing.

**Chest-high:**—Arm, leg and trunk exercises. Sink left to a hang-stand sideways, bend arms and sink right sideward. Jump to hang-stand frontways, bend the arms. Jump to a hang-stand frontways, jump and raise both knees to a half turn-over backward.

*Poles and Ropes.*

See notes for the work of the first year.

*Horizontal Ladder, also Boom.*

**Reach-high:**—Cross-hang and side-hang. Arm and leg exercises. Bending and straightening of arms (chinning). Travel forward and backward with swinging; also with turns.

**Waist and Knee-high:**—Arm, leg and trunk exercises. Knee-hang-lying with arm exercises. Cross-seat on the ladder, with trunk and arm exercises.

*Vertical Ladder.*

**On Ladder and Floor:**—Stand rearways. Trunk and leg exercises.

**On Ladder:**—Hang-stand frontways and sideways, quarter and half turns. Arm, leg and trunk exercises. Hang rearways with leg exercises. Walking up, circling around the ladder.

*Oblique Ladder.*

See work of the first year.

*Balance Beam.*

**Low Beam:**—Walking forward, hopping and turning. Walking backward. Gallop sideward. Change-steps with foot placing.

**Chest-high:**—Front and flank vault with turns.

*Giant Stride.*

Steps, running and flying. Gallop forward and sideward. Alternate gallop and skip; also change directions. Alternate a given number of running steps and flight. Flight with complete turns.

*Traveling Rings.*

See work of the first year.

## MEMORANDA

## MEMORANDA

## MEMORANDA

## FOURTH YEAR'S WORK

### I. TACTICS

#### A. *General Tactics.*

Review the tactics of the preceding grades. Combine alternations in marching and running.

#### B. *Special Tactics.*

Review the tactics of the soldier, the squad and the company.

### II. FREE EXERCISES

The essential exercises are the same as indicated for the first year, page 57.

#### *Co-ordinations.*

(a) Review the co-ordinations of the preceding grades.

(b) *Club-swinging.*

1. Alternate sets of swings in eight or sixteen counts with marching a similar number of counts, (a) marching forward and backward, (b) marching sideward to and fro, (c) marching in a square.

2. Sets of exercises arranged to music.

### III. RHYTHMIC STEPS

#### A. *Marching Steps.*

(1) Alternate marching in common time with running, and with fast time.

(2) Combined arm and leg movements while marching.

#### B. *Dancing Steps.*

(a) Social dancing.

(b) Appropriate original aesthetic dances for school plays, operettas, etc.

### IV. GAMES. TRACK AND FIELD WORK. MISCELLANEOUS ACTIVITIES

#### A. *Games.*

1. Develop the finer points of the team games of the preceding grades.

2. At times review the essential vigorous gymnastic games.

#### B. *Track and Field Events.*

Review previous events. Increase endurance runs to 5 minutes.

#### C. *Miscellaneous Activities.*

1. See the remarks under this heading in the first year's work. Keep track of the girls who do not lead a natural outdoor life; encourage them to do so.

**MEMORANDA**

## V. APPARATUS WORK

Review the apparatus work of the lower grades.

### *Side Horse.*

Review the work of the preceding grades.

### *Swinging Rings.*

Jump-high:—Leg and trunk exercises. Raise knees and turn-over backward, jump off backward. Short swing to a half turn-over with straight legs, lower the legs slowly. Hip-circle left and right. Pendulum swing with leg movements.

Head-high:—Arm, leg and trunk exercises. Bent-arm swing, short swing, raise knees to a complete turnover, jump off backward. Bent-arm hang short swing and turn over backward with straight legs, jump off backward.

Chest-high:—Arm, leg and trunk exercises. Sink slowly to a hang-stand sideways, circle left (right). Jump to a hang-stand frontways, bend arms, then straighten one arm sideward (forward). Jump to a hang-stand frontways, jump and raise both knees to a turn-over backward, return with a jump.

### *Poles and Ropes.*

See work of first year.

### *Horizontal Ladder, also Boom.*

Review the exercises of the preceding grades.

### *Vertical Ladder.*

Review the exercises of the preceding grades.

### *Oblique Ladder.*

See work of the first year.

### *Balance Beam.*

Review the exercises of the preceding grades. On the low beam, walk, run, or hop in various ways with two- and three-count leg exercises.

Chest-high:—Front vault; flank vault with half and quarter turns; rear vault.

### *Giant Stride.*

Review the exercises of the preceding grades. Flying jump over a rope; also with turns.

### *Traveling Rings.*

See work of the first year.

**MEMORANDA**

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# **GYMNASTIC POSITIONS** **FOR ALL SCHOOL GRADES**



**Figure 60**

- (a) Raise arms forward.
- (b) Place left foot forward.



**Figure 61**

- (a) Raise arms sideward.
- (b) Place left foot sideward.



**Figure 62**

- (a) Hands clinched, raise arms either fore-upward or side-upward.
- (b) Place left foot backward.



**Figure 63**

- (a) Place hands on shoulders.
- (b) Bend trunk left (sideward).

## GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



**Figure 64**

- (a) Bend arms upward.
- (b) Stride left sideward.



**Figure 65**

- (a) Place hands behind neck.
- (b) Raise the heels.



**Figure 66**

- (a) Place hands on hips.
- (b) Bend upper trunk backward.



**Figure 67**

- (a) Raise arms either fore-upward or side-upward.
- (b) Bend upper trunk backward.

# GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



**Figure 68**

- (a) Bend arms to thrust.
- (b) Bend upper trunk backward.



**Figure 69**

- (a) Place hands behind neck.
- (b) Raise left leg sideward.



**Figure 70**

- (a) Place hands on hips.
- (b) Bend knees (deep bend).



**Figure 71**

- (a) Place hands on hips.
- (b) Raise left knee forward.

# GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



**Figure 72**

- (a) Place hands on hips.
- (b) Lower trunk forward.



**Figure 73**

- (a) Lower arms downward.
- (b) Bend trunk fore-downward.



**Figure 74**

- (a) Place hands on hips.
- (b) Bend trunk backward.



**Figure 75**

- (a) Raise arms either fore-upward or side-upward.
- (b) Bend trunk left.

## GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



Figure 76

- (a) Raise hands in front of chest.
- (b) Turn trunk left.
- (c) Stride left forward.



Figure 77

- (a) Raise arms either fore-upward or side-upward.
- (b) Bend trunk left.
- (c) Lunge left sideward.
- (b and c) Fall-out left sideward.



Figure 78

- (a) Bend arms to strike.
- (b) Turn trunk left.



Figure 79

- (a) Raise arms either fore-upward or side-upward.
- (b) Turn trunk left.
- (c) Stride left forward.

## GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



**Figure 80**

- (a) Place hands on hips.
- (b) Slightly lower trunk forward.
- (c) Lunge left forward.
- (b and c) Fall-out left forward.



**Figure 81**

- (a) Raise arms sideward.
- (b) Bend trunk left.
- (c) Stride left sideward.



**Figure 82**

- (a) Bend arms to thrust.
- (b) Lunge right forward.



**Figure 83**

- (a) Bend arms to strike.
- (b) Turn trunk left and bend left.
- (c) Stride left forward.

## GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



Figure 84

- (a) Bend arms overhead to strike.
- (b) Lunge left sideward.



Figure 85

- (a) Bend arms to strike.
- (b) Bend trunk right.
- (c) Lunge left sideward.



Figure 86

- (a) Clinch hands, bend arms, left overhead, right behind back.
- (b) Bend trunk right.
- (c) Lunge left sideward.



Figure 87

- Rhythmic steps.
- (a) Right arm sideward, wave left forward.
  - (b) Place left foot forward (point left forward).

## GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



**Figure 88**

**Rhythmic steps.**

- (a) Right arm sideward, wave left forward.
- (b) Bend trunk left.
- (c) Place left foot forward (point).



**Figure 89**

- (a) Left arm sideward, wave right upward.
- (b) Bend trunk left.
- (c) Place left foot forward (point).



**Figure 90**

- (a) Left arm sideward, wave right forward.
- (b) Leg position during swing-hop left.



**Figure 91**

- (a) Hands at waist.
- (b) Leg position during step-hop right.

# GYMNASTIC POSITIONS FOR ALL SCHOOL GRADES



**Figure 92**

**Rhythmic steps.**

- (a) Hands at waist.
- (b) Leg position during balance-hop right.



**Figure 93**

- (a) Hands at waist.
- (b) Leg positions during curtsy left.



**Figure 94**

- (a) Left arm sideward, wave right forward.
- (b) Curtsy left.



**Figure 95**

- (a) Left arm sideward, wave right forward.
- (b) Bend trunk left.
- (c) Curtsy left.

# APPENDIX

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## B. CORRECTIVE GYMNASTICS

Most people do not sufficiently realize the inconveniences and, often, the dangers resulting from faulty posture. Faulty positions lead to decreased heart and lung action, and, sometimes, to a displacement of one or more of the vital organs. Through this the person's vitality is lowered and he becomes more susceptible to all forms of diseases. Corrective work, if undertaken seriously, and persisted in by the afflicted person for a certain length of time, will cure most mild cases of deformity and improve the bad ones.

This chapter has been prepared to call attention to the postural deformities usually found among school children, also to give to parents, teachers and pupils a selection of valuable corrective exercises that can be performed anywhere. No exercises upon special apparatus are, therefore, included in the list.

### ROUND SHOULDERS (Kyphosis)

#### Examination

When examining a pupil it is necessary to determine the conditions which have brought about this faulty posture. An incorrect sitting position in school or at home is in many cases the cause, while in some it may be a shortening of the pectoral muscles. In other cases, eye weakness may be responsible for the condition. It is important, therefore, that the contributory factors as well as the corrective work be considered, and that the conditions that led to the deformity be removed.

#### View-points for Corrective Work

Exercises should be given to increase the flexibility of the thorax, and to secure a better position of the head. The shoulders should be drawn downward and backward, fixing them by their adductors and depressors. This fixation of the shoulders allows the large pectoral muscles to exert an upward pull upon the ribs, thereby raising the chest. Accompanying this fixation of the shoulders a general straightening of the entire thoracic spine should take place. Great care must be taken to prevent a pushing forward of the head when drawing back the shoulders. The points to be worked for are a "raised chest" and a "straighter upper spine."

A strict progression should be observed in the exercises to be given, and the child *should not be fatigued* by too frequent repetitions. By a gradual increase in the number of repetitions and in the difficulty of the exercise, a faulty posture can be corrected, and a better carriage assured. This improved carriage will induce better respiration and circulation, and consequently better physical and mental health.

**Exercises.** All movements are to be repeated as often as directed by the teacher in charge.

1. Sitting in a chair, hands placed on the thighs; raise the chest, pulling up the ribs as high as possible. Hold this position for a moment, then relax.

2. Lying frontways (face downward) on a table, bench, hard couch or on the floor. Place hands on hips, then raise the head backward, keeping the chin close to the neck.

3. Lying frontways. Place hands on hips, then bend the upper trunk backward (straighten the upper spine). Caution: Avoid bending in the lumbar spine.

4. As 3, bending the arms upward, hands at the shoulders.

5. As 3, placing the hands in rear of head.

6. As 3, raising the arms upward.

N. B.—These exercises, being postural, should be taken on command only (not rhythmically). Ensure a firm contraction of the muscles involved, and observe accurate execution to avoid the production of other faults. Turning of the trunk in standing or sitting is a good supplementary exercise for increasing the flexibility of the trunk.

## LATERAL CURVATURE OF THE SPINE (Scoliosis)

### Examination

In this faulty posture the vital organs are compressed and displaced, leading to a weakening of the health, due to the crowding or displacement of the viscera in the thoracic and abdominal cavity. By means of proper exercises the abnormal curve of the spine will be reduced, if not entirely eliminated. In most cases the convexity is toward the left. In this case (left scoliosis) the pupil's left shoulder will be raised and twisted forward, and the right pelvic bone will be more exposed than the left. As a rule there is a twisting of the thorax to the right. The triangle between the right arm and the body will be larger than is the left. When the pupil bends forward, the curve may be determined by the position of the tips of the spinous processes; and when the pupil is sighted across the back the right side will appear higher than the left.

The causes which produce this mal-position may be too high or too low benches in the schoolroom, sitting on one foot, bad lighting when working in school or at home, continually carrying books or other heavy objects on one arm. These causes should be removed first. One leg being shorter than the other may be the cause for scoliosis. A built-up shoe then must be worn on the short leg. Pott's disease, indicated by twitching of the back muscles, may be the cause. In this latter case, also in tubercular affection, no correction by exercises should be attempted, but the case should be given into the hands of a competent orthopedic surgeon.

## View-points for Corrective Work

The most important muscles which will correct this faulty posture must first be strengthened and shortened by repeated strong contractions (this on the side toward the convexity), and the fellows on the opposite side must be stretched in proportion. In nearly all cases of long standing a compensatory curve to the opposite side is found in the lumbar region. As the dorsal curve is eliminated, this compensatory curve often disappears. If not, the exercises must be modified to include this curve.

If the curve is primarily in the lumbar region a short leg usually is the cause.

Creeping exercises are valuable in causing a forcible contraction of the muscles at either side of the spine, thereby causing a vigorous bending toward the desired side. Creeping is excellent also for increasing mobility of the spine. Mal-positions that cannot be corrected by simple exercises always should be placed under the care of an orthopedic surgeon.

**Exercises** (for left scoliosis). Repeat movements as often as directed.

1. Side stride stand with left hand on hip. The right arm is bent to strike, or placed in rear of head, or stretched upward, as a starting position. In this position bend the trunk to the left.

2. Left hand on the curve, right hand on hip, slow marching forward or backward (press hard).

3. As 2, with the right hand in various starting positions to increase the leverage.

4. Lying on the right side on a table, feet fixed, body over the table's edge to within a few inches of the waist. Place the left hand on the hip and raise the right arm to strike, or behind the head or upward. In this position bend trunk to the left.

5. Lying as in 4, raise the right arm upward and the left arm side-ward. In this position bend the trunk left.

6. Creeping position, bringing the left knee close up to the left shoulder, at the same time stretching the right arm upward and the right leg downward as far as possible.

**Note.**—The most successful work in the eliminations of mal-positions, especially of curvatures, is done by over-correcting the curve; *i. e.*, bringing about a curve to the opposite side, and then strengthening the holding muscles by giving each side equal work.

## INCREASED CURVE OF THE LOWER SPINE (Lordosis)

### Examination

In examining a pupil for an abnormal curve in the "small of the back" the examiner will find an exaggerated pressing back of the hips accompanied usually by a too-pronounced pushing forward of the chest.

Sometimes there is a swaying back, accompanied by a pushing forward of the hips. The result of this unnatural curve is an abnormal stretching of the posterior muscles (the erector spinæ) manifesting itself in back-ache. Often there also is a serious displacement of the organs of the abdominal cavity.

### View-points for Corrective Work

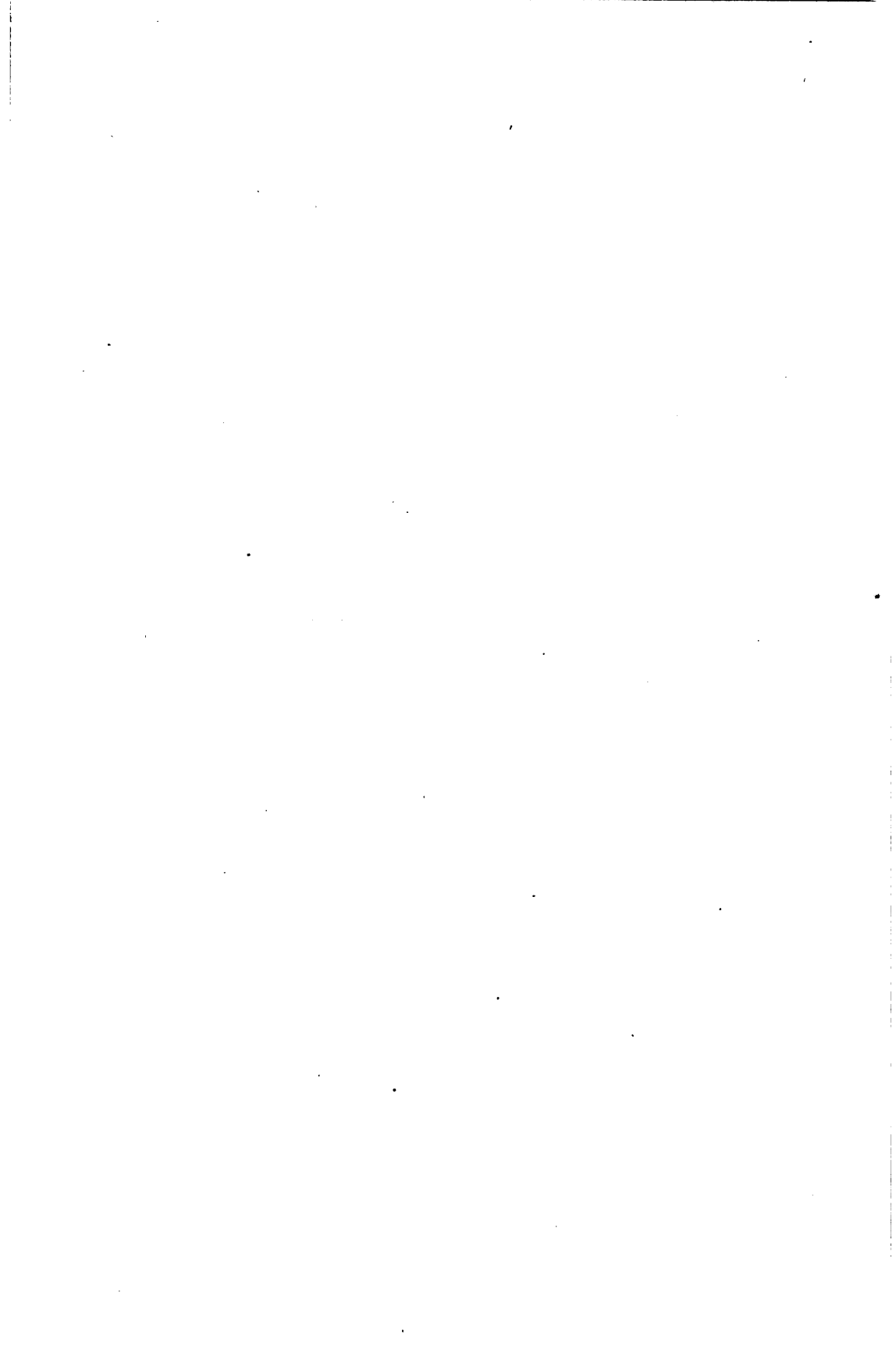
Exercises should be selected that help to decrease the abnormal curve in the lumbar spine, and which help to strengthen the muscles whose function it is to hold the spine in its natural position.

**Exercises.** Repeat as often as directed.

1. Sitting on a chair, bend fore-downward as far as possible, relaxing all the muscles of the back.
2. Lying on the back on the floor, hands at the sides; raise the knees up and backward as far as possible.
3. Hang by the hands from a bar; raise the knees upward as far as possible.
4. Lying on the back, hands on the floor at the sides. Raise the trunk (the hands assisting) and bend it forward, reaching forward with the hands as far as possible.
5. Lying on the back; hands on the floor at the sides. Raise the straight legs upward and backward as far as possible.
6. Lying as in 5, raise the trunk upward and then bend it forward as far as possible.

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